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ABSTRACT

This paper attempts to specify the ways in which bilingualism might affect cognitive functioning. Two general ways, the "linguistic" and the "non-linguistic," are distinguished. Linguistic explanations explain the effects of bilingualism on cognition as a direct result of the fact that the bilingual has access to two verbal codes. Non-linguistic explanations account for these effects by reference to factors which are extrinsic to, or by-products of, the fact that the bilingual has access to two verbal codes. For example, the greater amount of social interaction which is presumably involved in learning two languages at an early age has been invoked to explain the bilingual's higher level of concept formation. The validity of Macnamara's (1970) theoretical analysis of bilingualism and thought is considered in the light of this distinction. (Author)

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Abstract

A Theoretical Perspective on the Relationship between Bilingualism and Thought

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This paper attempts to specify the ways in which bilingualism might affect cognitive functioning. Two general ways - the "linguistic" and the "non-linguistic" - are distinguished. Linguistic explanations explain the effects of bilingualism on cognition as a direct result of the fact that the bilingual has access to two verbal codes. Non-linguistic explanations account for these effects by reference to factors which are extrinsic to, or by-products of the fact that the bilingual has access to two verbal codes. For example, the greater amount of social interaction which is presumably involved in learning two languages at an early age has been invoked to explain the bilingual's higher level of concept formation. The validity of Macnamara's (1970) theoretical analysis of bilingualism and thought is considered in the light of this distinction.

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A Theoretical Perspective on the Relationship between Bilingualism and Thought

Theoretical analyses of the relationship between bilingualism and thought are relatively few. This is surprising in view of the substantial number of empirical studies of the effects of bilingualism on cognitive functioning. However, many of these studies have been carried out with inadequate theoretical guidelines. Typically, predictions have been derived only from the results of previous studies with little consideration of broader theoretical issues such as the relationship between language and thought. This neglect on the part of researchers has been partly due to the complexity of the issue and the lack of any clear consensus as to what are the interrelationships between language and thought.

However, in recent years, several separate lines of investigation have deemphasized the role of language in cognitive functioning. The Piagetian school has consistently held that the development of the basic cognitive schemata owes little to language and this position has received strong empirical support from the investigations of Furth (1966) and Sinclair-de-Zwart (1969). Also, within the context of what Furth (1969) calls "mediating representational knowing" imagistic mediation has taken over many of the functions once attributed to verbal mediation (Paivio, 1971).

It is against this background that the question of the effects of bilingualism on cognitive functioning must be posed. If language is less than crucial in cognitive development then surely one cannot expect that bilingualism will have any marked effects on cognitive development.

This is precisely the conclusion reached by Macnamara's (1970) theoretical analysis of bilingualism and thought. His analysis is aimed at showing that bilingualism is unlikely to have any causal effect on either intelligence or creativity. He points out

> "The fears, or hopes, which caused people to study the relationship between bilingualism and I.Q. seem to spring from the general view that language either constitutes or creates intelligence (1970: 34)."

He subjects this linguistic determinism to a reductio ad absurdum and shows how Ervin and Osgood models of compound and co-ordinate bilingualism depend on a similar view of the relationships between language and thought. Macnamara argues that linguistic functioning is to a great extent dependent on non-linguistic functioning of many sorts and supposedly linguistic universals are in fact universals of human intelligence. Against the background of his theoretical analysis of language and thought Macnamara concludes that

> "...it seems unlikely that bilingualism should have any effect upon the development of the basic, common, cognitive structures (1970: 33)."

Macnamara's analysis poses serious problems for those who are carrying out research into the effects of bilingualism on cognition. It calls into question the whole purpose of investigating differences in cognitive functioning between bilinguals and unilinguals and the meaningfulness of any differences that happen to be found. Macnamara's analysis is both provocative and useful in that it should force the researcher to examine the broader theoretical context within which he is operating. If Macnamara's argument cannot be refuted then there is little purpose in carrying out research on this topic since the results will be theoretically meaningless.

The purpose of this paper is to attempt to bridge the gap between the theoretical and the empirical firstly by refuting Macnamara's analysis of why bilingualism is unlikely to affect cognitive functioning, and secondly, by placing research on the topic of bilingualism and cognition into a theoretical framework where the results can be meaningfully interpreted.

One feels intuitively that Macnamara's analysis must be faulty since researchers continue to report significant differences in cognitive functioning between bilinguals and unilinguals (e.g., Bain 1973, Cummins & Gulutsan 1973). The fact that the majority of the studies since the classic Peal and Lambert (1962) study arrive at conclusions which are remarkably consistent with each other adds to this conviction.

However, Macnamara's argument that bilingualism should have no large scale effect on intelligence or creativity is extremely strong. One way to by-pass it is to deny his claim that linguistic functioning is to a great extent dependent on non-linguistic functioning and does not play a crucial role in cognitive development. However, the present writer is in full agreement with this position. If one allows that language does not play a crucial role in the development of the basic cognitive structures surely Macnamara's conclusion that bilingualism is unlikely to do so either is unescapable.

I am going to argue that Macnamara's conclusion is not inescapable. His analysis is faulty, firstly, in that it fails to distinguish between the specifically linguistic effects of bilingualism on cognition and effects which are extrinsic to, or by-products of the fact that the bilingual has two verbal codes with which to represent the world. Secondly, the fact that language (in the unilingual situation) does not play a causal role in the development of cognitive structures does not necessarily mean that certain linguistic features of the bilingual situation will have no effect on the speed with which certain concepts are grasped in ontogenesis. In other words, the argument is that

(1) in addition to the primary linguistic difference between the bilingual and unilingual situations, there are potentially important non-linguistic differences which may facilitate or hinder mental development.

(2) while no large scale linguistic effects should be expected there are ways in which the bilingual's access to, and use of two linguistic codes might effect his mental development.

Linguistic and Non-linguistic Aspects of the Bilingual Situation:

The bilingual's experience differs from the unilingual's not only by the fact that he has access to two verbal codes in comparison to the unilingual's one, but also by several factors which, although they derive from the primary linguistic difference, are not in themselves linguistic.

As an example of what I mean consider Furth's (1966) studies of the cognitive effects of deafness - similar to bilingualism in that both affect the way in which an individual represents his world. Furth found no cognitive deficiencies which could be attributed to the specifically linguistic factor (the fact that the deaf are linguistically deprived). He argues that most of the deficiencies which were found could be attributed to the fact that the deaf are deprived of normal social interaction. In other words, the lack of normal social interaction rather than the linguistic deprivation is the causal factor in explaining the deaf child's intellectual lag. Furth uses this conclusion to support the Piagetian view that language is not the crucial element in the development of cognitive structures.

In a similar fashion it can be argued that there are two general ways in which bilingualism might affect cognitive growth - the specifically linguistic and the non-linguistic. Macnamara's (1970) analysis is deficient in that it fails to take any account of non-linguistic factors which may differentially influence the cognitive development of bilinguals and unilinguals. The distinction between linguistic and non-linguistic explanations has not been formally recognised up to now, although several investigators have proposed non-linguistic explanations to account for observed differences in the cognitive functioning of bilinguals and unilinguals.

Non-linguistic Explanations: This type of explanation involves accounting for the effects of bilingualism on cognition by reference to factors which are extrinsic to, or by-products of the fact that the bilingual has access to two verbal codes. This type of explanatory factor has been suggested by several investigators. For example,

Liedke and Nelson (1968) suggest that the greater amount of social interaction which is presumably involved in learning two languages at an early age accounts for the higher level of concept formation which they found in their bilingual grade 1 group. Similarly, Peal and Lambert (1962) argue that the bilingual is exposed to a wider range of experiences due to his participation in two cultures.

A different type of non-linguistic variable has been suggested by both Peal and Lambert (1962) and Balkan(1970) to account for the bilingual's greater cognitive flexibility. They argue that the habit of switching languages and making use of two difference perspectives develops in the bilingual a "souplesse d'esprit" which will help him in tasks requiring preceptual or conceptual reorganization.

These explanations are "non-linguistic" in that they do not exphasize the effects of the specifically linguistic variable (two verbal codes rather than one) on cognition. For example, the fact that the switching (in Peal and Lambert's and Balkan's explanations) is between two languages is not intrinsic to the explanation. The causal element is the switching of perspective rather than any specifically linguistic factor.

Linguistic Explanations: Several different types of linguistic explanations have been suggested to account for the observed superiority of bilinguals on tests of general reasoning and verbal intelligence. Peal and Lambert (1962), for example, have suggested that the overlap of French and English vocabulary could account for the bilingual's greater verbal ability and Lambert and Tucker (1972) suggest that transfer across and comparison of languages might have the same effect.

In order to explain the bilingual's superiority on tests of general reasoning or concept formation, Peal and Lambert (1962) follow Leopold (1949) in suggesting that because of his two languages the bilingual child may be forced to conceptualize things and events in terms of their general properties rather than relying on their linguistic symbols. Leopold (1949) observed that his bilingual child quickly learned to separate the sound of the word from the thing itself, and a

recent study by Ianco-worrall (1972) in South Africa has shown that bilingual children do in fact separate sound and meaning earlier than unilingual children.

This explanation is "linguistic" in that the bilinguals' higher level of concept formation is explained as a direct result of the fact that they have two words for the same referent.

Similarly, many earlier studies made use of "linguistic" explanations in that they attributed the bilinguals' lower level of verbal ability to inability to cope with two language systems.

Do these attempts at "linguistic" explanations not contradict the fact that language should have no large-scale effects on the development of cognition? The key word here is "large-scale". No theorist denies that language plays an important role in mental development. What is denied (by the Piagetian school) is that language plays a causal role in the development of cognitive structures. Inhelder et al. (1966) express the Piagetian view ad follows:

> "First, language training... operates to direct the child's interactions with the environment and thus to "focus" on relevant dimensions of task situations. Second... language does aid in the storage and retrieval of relevant information. However, our evidence offers little if any support for the contention that language learning per se contributes to the integration and coordination of "informational units" necessary for the achievement of the conservation concepts (1966: 163)."

It is certainly legitimate to ask "If language (in the unilingual situation) helps the child focus on relevant dimensions of task situations, what will be the effect of access to two languages?" The effects of focussing on relevant aspects of the environment with two languages has been outlined by peopold (1949) and Peal and Lambert (1962) and the accounts of these authors has been empirically supported by Ianco-worrall (1972). Peal and Lambert's argument that it might lead to a higher level of concept formation seems very plausible.

Also, while Furth (1966) holds that languages does not have any large-scale effects on cognitive development, he does not deny that the deaf are deficient in embodying concepts in language. Thus, while deafness will not prevent concept formation in general, it will hinder the representation of certain types of concept which are accessible and expressible mainly through the linguistic medium e.g. the concept of democracy. In a similar fashion one can hypothesize that while language per se is not a causal element in the development of cognitive structures, the linguistic differences which distinguish bilinguals from unilinguals will lead to differences at the conceptual level.

What is the significance of this distinction between "linguistic" and "non-linguistic" explanations? By making this distinction explicit we should be enabled to think more clearly on the possible effects of bilingualism on cognitive development and relate our ideas to issues in the broader theoretical context. For example, it is clear that the "language-thought" issue is not the only one relevant to the effects of bilingualism on cognition; the state of theory regarding the effects of social interaction on mental development is equally relevant. Thus, analyses such as Macnamara's, which are based on consideration of only one type of explanation can be seen to be inadequate.

It is hoped that this analysis, by distinguishing the two fundamentally different ways in which bilingualism might affect cognitive functioning, will provide a more adequate theoretical context for the study of bilingualism and cognition than has existed hitherto.

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